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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/744,722 | 05/07/2001 | Klaus Peter Crone | AG-6564 | 3395 |

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EXAMINER

MULPURI, SAVITRI

ART UNIT PAPER NUMBER

2812

DATE MAILED: 03/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/744,722

Applicant(s)
Crone et al

Examiner
Savitri Mulpuri

Art Unit
2812



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on May 7, 2001
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 20) ☐ Other: _____

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DETAILED ACTION

This action is in response to the applicant's preliminary amendment filed on 5/7/01

Claim Rejections - 35 USC § 112

1. Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no disclosure in the entire instant disclosure that coating the layer in the range of 400 to 600 C. Instant disclosure includes only coating temperature is less than glass transition temperature.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 4,5 are rejected under 35 U.S.C. 102(b) as being anticipated by Mitlitsky et al ~~or~~

Mitlitsky et al discloses a product of forming solar cell device by the following process steps: Providing low temperature plastic material such as polyethersulfone (PES), and such plastic material is incapable of sustaining process temperature of higher than 180 C and such

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materials are called low temperature substrates and such plastic material have glass transition temperature of not greater than 180 C (see col. 3, lines 1-45).

Claim 4-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Taniguchi

Tadatake (JP 05090624)

Taniguchi discloses forming CdTe on PET, where glass transition temperature less than 200 C

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mitlitsky et al in combination with Takenouchi et al.

Mitlitsky et al do not disclose PET or PEN as low temperature substrate. Takanouchi et al discloses a product of photovoltaic devices using low temperature substrates such as polyethylene terephthalate (PET) or (polyethylene sulfone(PES). It would have been obvious to

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replace PET substrate of Takenouchi et al with PES substrate of Mitlitsky et al, because both PES and PET are functionally equivalent as taught by Takenouchi et al.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitlitsky et al.

Providing low temperature plastic material such as polyethersulfone (PES), and such plastic material are in capable of sustaining process temperature of higher than 180 C and such materials are called low temperature substrates. Mitlitsky et al further disclose depositing a photovoltaic film such as CdTe at a temperature in the range of 100-150 C so that evaporation technique does not exceed the temperature of the substrate greater than 180 C, and then performing laser pulse heating at a temperature of (see col. 3, lines 1-45). Mitlitsky et al performs pulsed laser annealing to crystallize the CdTe at very high temperature as high as 900 C without heating and damaging the underlying low temperature plastic substrate(see col. 4, lines 59-67). Mitlitsky uses plastic substrate of 25 microns(see col. 5, lines 5-7) and time period for laser heating 100 microseconds, which is less than claimed time period of 0.01 sec to 1 sec and also power is not same as power in Mitlitsky et al. However, such power of the pulse laser energy and time period depends on the thickness of the substrate and thickness of the photovoltaic layer etc., . The choice of selecting the power and time period of pulse laser exposure would have been well within the scope of one of ordinary skill in the art depending on the thickness of the substrate and thickness of the photovoltaic layer etc. The crux of the instant invention is depositing CdTe at lower than transition temperature of the plastic material such as

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PET and not damaging the plastic substrate by exposing the laser at temperature higher than transition temperature and very short period of time.

Applicant is requested to submit all the references found in PCT application search report in the IDS form PTO 1449. All the references were reviewed prior to the preparation of office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Mulpuri whose telephone number is (703) 305-5184. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


SAVITRI MULPURI
PRIMARY EXAMINER